

IDF Industrial Direct-Fired Heater



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Industrial Direct-Fired Heater Product Details

PRODUCT DESCRIPTION

The IDF Industrial Direct Fired Heater is the key to a warmer, more comfortable building environment. It is suitable for indoor and outdoor configuration up to 175,000 CFM

STANDARD FEATURES

- Cabinet: Welded structural or formed channel base frame with lifting lugs. Heavy-gauge color bond steel casing with rust resistant gray enamel paint finish. One-inch thick 1.5# density neoprene-coated fiberglass. Insulation is glued and pinned. Sloped roof for outdoor units.
- Blower/Motor: Rated forward curve DWDI centrifugal blower. Polished steel shaft with rust inhibitor. Maximum operating speed $\leq 75\%$ of the first critical speed. ODP motor, 1800 RPM, T-frame, 1.15 service factor mounted on adjustable base.
- Bearings: \geq BMA 120, heavy-duty industrial.
- Drives are designed for 150% motor brake HP
- Drives:
 - ≤ 5 HP Adjustable V-belt drives
 - ≥ 7.5 HP fixed drives on and larger
- Burner: High-efficiency burner with observation port and adjustable profile plates.
- Burner Manifold: Stainless steel mixing plates and aluminum gas manifold. 30:1 turndown ratio. Intermittent pilot assembly with spark igniter and ignition transformer. Solid state flame monitoring system.
- Manifold Pressure
 - Natural gas 7-14" W.C. or 1-5 psig
 - Propane 11" W.C.
- Manifold: pilot regulator, gas valve, shutoff valve, safety shutoff valve, pressure regulator or combination modulating and pressure regulating valve, modulating gas valve, main test fire valve, manifold pressure taps.
- Enclosure: Electronic flame safeguard relay manual reset. Airflow pressure switches; high and low. Manual reset high limit. Factory wired control panel with numbered terminal strip.
- Motor Starter: control circuit transformer, 120V w/ overloads
- Control panel service switch & circuit breaker
- Terminal connections for exhaust interlock
- Nationally recognized components, service parts.

OPTIONAL FEATURES

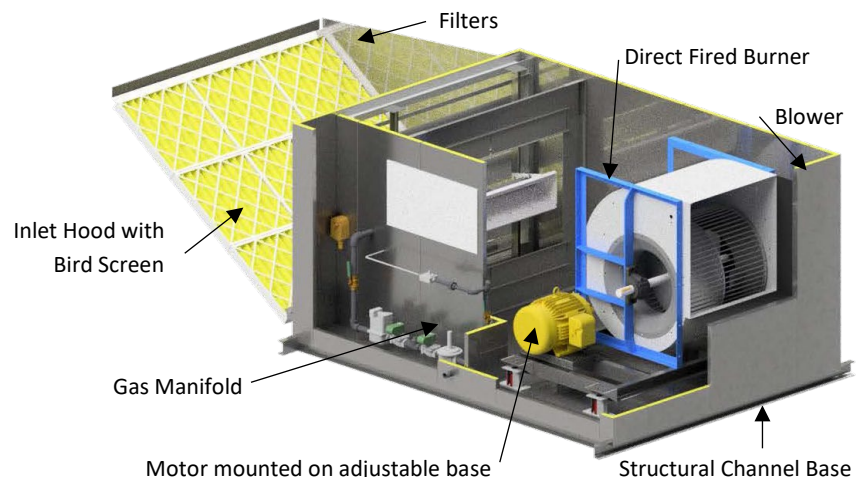
- 80/20 Mix Box: Cost-effective space heating and recirculation. Includes V-bank filter rack.
- Weather Housing: Control & manifold enclosure
- Inlet Hoods: Expanded metal screen inlet with optional 2" filters.
- Filter Section: V-bank filter section with side access suitable for complete with filter gauge and/or indicating light.
- Filter: 2" thick permanent, pleated, and throwaway filters; various efficiency bag filters and HEPA filters. Rack available.
- Winter Filter: On the burner discharge side.
- Damper: Motorized inlet & discharge damper parallel blade damper with a two-position spring return actuator and end switch.
- Roof Curb: Prefabricated galvanized roof curb 16" or 24" high; full perimeter on most units.
- Hinged Access Doors: Sealed with gasketing.
- Blowers: Backward inclined, air foil, and plug fans
- DX Plenum: Coil located in vertical or horizontal airflow. Drain pan when applicable.
- Coil Plenums: Heating coils- steam, hot water, and glycol cooling coils- chilled water, DX coil
- Evaporative Coolers: Industrial and commercial
- Hinged Access Doors: Door switches, special access door gasketing, #310 ventlock fasteners
- Mushroom Hood: Inlet air velocity ranges between 450 and 550 FPM at max air capacities listed. Complete with internal screen for debris.
- Louvered Inlet: Sized for a max velocity of 500 FPM to minimize precipitation potential.
- Discharge: 4-Way Adjustable discharge head provides 4 equal quantities of air in the conditioned space.
- Horizontal Discharge Head 180° vertical and horizontal adjustment with 360° of free rotation
 - Internal Vibration Isolation: Blower and motor isolated on separate frame with R.I.S. or spring c/w canvas connector.
- External Vibration Isolation: Floor mounted or suspended isolation.
- Service Platform: Provides access to controls and gas train.

IDF Industrial Direct-Fired Heater

- Motors: TEFC and high-efficiency, meeting, EEE and CSA standards and 2-speed
- Disconnect Switch: Weatherproof enclosure; non-fused or fused.
- Gas Train Requirements
 - Meets Factory Mutual (FM) requirements.
 - Meets Industrial Risk Insurers (IRI) requirements.
- High Gas Pressure Regulator - Required on natural gas with pressure more than 5 psig and LP applications more than 11 " W.C.
- High/Low Gas Pressure Switches: Manual reset, gas pressure safety switches which lock out the burner in the event of gas pressure malfunction.
- Control Panels: NEMA4 or 12 custom, unit mounted or remote enclosures. Explosion proof panels
- Dual Volume: VFD to achieve lower volume (25-30% of max) on low speed with the modulating profile plates.
- Auto low limit freeze protection, control with bypass damper
- Exhaust interlock relay
- Proof of closure valve
- Inlet air controller
- Ultraviolet flame supervision
- Audible alarm
- Firestat
- 7-day programming timeclock
- Special coatings
- Purge timer
- Delay exhaust start
- 115-volt GFI service receptacle
- Marine service light with 100-watt bulb, guard, and lighted switch
- High density insulation
- 2" thick and 4" thick insulation
- Motor and bearings out of airstream
- Internal liners: 22 gauge solid or perforated.
- JIC wiring
- Extended grease lines
- Belt guards
- Checker plate floor
- Walk-in service corridors
- Finish: corrosion resistant two-step acrylic
- Special coatings
- Special construction: aluminum, stainless steel, heavier gauges
- Cooling Add-Ons:
 - Evaporative cooling module option
 - DX cooling coil option

PRODUCT BENEFITS

- Assurance: ANSI Z83.4:2015/02/01, ANSI Z83.25:2015, CSA 3.7:2015/02/01 & CSA 3.19:2015 Ed.2
- ETL & C-ETL listed.
- Factory wired, piped, and test fired.
- Best turndown ratio for power burners in the industry (up to 60:1).
- Lead times for industrial cooling & heat recovery are 12-14 weeks.



Heater Custom Wiring Options



SEIMENS PLC WITH HMI



ALLEN BRADLEY PLC



B.A.C. NET CONTROLS



LONWORKS CONTROLS

CONTROLS

- Controls selected to meet end-user protocol.
- Factory installed.
- Factory programmed.
- Factory tested.
- Field commissioning services available.

DX Cooling Modulation



AC-TECH VFD

- Programmable digital and analog I/O allowing drive to be configured for tasks such as multiple preset speeds, electronic braking, and motor jogging.
- Power range: 0.37 to 22 kW
- Wide speed range with up to 200% torque for highly dynamic motor response
- EPM plug-in memory chip & programmer to copy parameters.



Superheat Controller EC3-X33

- Perform all control tasks and precisely regulate the superheat at the evaporator.
- A complete system consisting of control valve, superheat controller, and temperature and pressure sensor, controls the superheat exactly to set point.
- The MOP (Maximum Operating Pressure) function protects the compressor from dangerous overload conditions.
- The positive shut-off function eliminates the use of an additional solenoid valve and built in backup battery closes the valve after power loss.



EX4 Electrical Control Valve

- Optimized for control of liquid or gaseous mass flow in refrigeration systems.
- Energized directly from the electrical power and therefore operates independently of differential pressure, ensuring accurate temp/humidity control.



Tandem Digital Scroll Compressors

- Simple, variable modulation, for temperature control within 0.5 F
- Lower operating cost
- Reduced power consumption – up to 30% more efficient than using hot-gas bypass.
- Longer cycle times to reduce wear and improve humidity control.
- Available for commercial air-conditioning and refrigeration applications
- Available in configurations from 3-30HP

Heater Custom Wiring Options



Electronically Commutated Motor (ECM)

The high efficiency fan provides even air distribution on units with filter & DX coil.



Bypass Damper with Burner

Modulating profile dampers provide precise pressure control for industry leading volume turndown. Up to 10%, depending on model.

Controls



Allen Bradley CompactLogix PLC

- Integrated motion over EtherNet/IP for maximized scalability.
- Built In Energy Storage.
- Supports up to 2 axes Kinematics for simple articulated robotics.
- Open socket capability allows support for Modbus TCP.
- Provides support for Device Level Ring (DLR) network technologies to help.
- increase network resiliency.



PowerFlex VFD

Built in Ethernet/IP port, allows you to configure, control and easily manage drive data over EtherNet/IP networks

- Premier integration into the Logix environment for simplified and enhanced configuration, programming, commissioning, diagnostics, and maintenance.
- Automatic Device Configuration-Logix controllers can detect a replaced drive and automatically download all configuration parameters without manual intervention to help reduce downtime.



Industrial Direct Drive Plenum Fan

- Efficiency- Plenum fans can be as efficient or more efficient than scroll type fans.
- at specific operating points towards the bottom of the fan curve.
- Saves Space- There are no transitions or diffusers within the Air Handling Unit.
- Fans are licensed to bear the AMCA certified ratings seal for both sound and air,
- and fan efficiency grade (FEG).

Direct-Fired Heater Controls



STANDARD OPTION: BACNET MS/TP

The BACnet MS/TP enabled DDC controller provides communication with the Building Management System to remotely control and override setpoints, unit start/stop and monitor process variables such as temperature, humidity, alarms and more.

Terminals are provided in each unit for easy and smooth termination of twisted pair wires into the DDC controller network ports.



DISTECH-ALLURE EC SMART SENSOR

The Allure smart sensor provides remote control of the unit. It is compact and can be configured to suit end user's needs which simplifies equipment operation. A single CAT5e Ethernet cable is used to connect the smart space sensor to the DDC controller. No additional wiring required.

The Allure EC smart sensor senses temperature, humidity, CO₂ and motion. The built in LCD is configured to display unit alarms, space/ outside air temperatures, required set points, fan status, current mode of operation and more. Setpoints can be easily adjusted via the keypad to satisfy occupants of the space.



OPTIONAL UPGRADE: DISTECH ECLYPSE CONTROLLER (ECY-303)

The ECLYPSE Connected Equipment Controller is designed to satisfy the needs of a wide range of HVAC applications such as small and medium terminal applications. It integrates a control, automation and connectivity server, power supply, and I/O in one convenient package.

- Distech Eclipse controller supports BACnet IP communications and supports Modbus to connect meters, variable frequency drives etc.
- Fewer wire runs to a centralized switch are required, thereby achieving installation and cost reduction.
- A laptop can be connected to the second Ethernet port for direct programming, configuration and commissioning using ECgfxProgram or ENVYISION.
- Both wired and wireless connection. Wi-Fi connection to the building's existing Wi-Fi network or to Hotspot.

Horyzon Touch screen Display: The Horyzon display features a high resolution, color LCD touch screen designed for wall or panel mounting. They provide easy and intuitive access to the internal data of ECLYPSE series controllers. With Touch screen display system integrators can quickly access, view, and configure operating parameters for troubleshooting.

IDF Specifications, IDF109 – IDF125

MODEL	SCFM	BLOWER c/w BELT	OUTLET VELOCITY FPM	PLENUM FAN c/w DIRECT	Fan HP @ ESP in w.c.					
					0.25	0.5	0.75	1	1.5	2
IDF 109	1000	9/7	1529	280Ø ECM	1/3**	1/3**	1/2**	1/2**	3/4**	3/4**
	1200	9/7	1835	315Ø ECM	1/2	1/2	3/4	3/4	1	1**
	1400	9/7	2140	315Ø ECM	1/2	1/2	3/4	3/4	1	1 1/2**
	1600	9/7	2447	355Ø ECM	3/4	3/4	3/4	1	1	1 1/2**
	1800	9/9	2143	355Ø ECM	0.75	0.75	1	1	1	1 1/2**
	2000	9/9	2381	355Ø ECM	1	1	1	1 1/2	1 1/2	2
	2200	9/9	2619	355Ø ECM	1	1	1 1/2	1 1/2	1 1/2	2
	2400	9/9	2857	355Ø ECM	1 1/2	1 1/2	1 1/2	1 1/2	2	3
	2600	9/9	3095	355Ø ECM	1 1/2	1 1/2	1 1/2	2	2	3
IDF 112	2000	12/9	1764	355Ø ECM	1/2	1/2	3/4	3/4	1 1/2*	2*
	2500	12/9	2205	355Ø ECM	3/4	1	1	1 1/2	2*	3*
	3000	12/12	2070	400Ø ECM	1	1 1/2	1 1/2	2	2	3*
	3500	12/12	2415	400Ø ECM	1 1/2	1 1/2	2	2	2	3
	4000	12/12	2760	400Ø ECM	1 1/2	1 1/2	2	2	3	5
IDF 115	3000	15/11	1850	400Ø ECM	0.75	3/4	1	2*	2*	3*
	3500	15/11	2159	450Ø ECM	3/4	1	1	1 1/2	2*	3*
	4000	15/11	2467	500Ø ECM	1	1 1/2	1 1/2	2	2	5*
	4500	15/15	2198	560Ø ECM	1 1/2	2	2	2	3	5*
	5000	15/15	2442	560Ø ECM	2	2	3	3	3	5
	5500	15/15	2686	630Ø ECM	3	3	3	3	5	5
	6000	15/15	2930	630Ø ECM	3	3	3	5	5	5
	6500	15/15	3175	630Ø ECM	3	5	5	5	5	7 1/2
IDF 118	5000	18/18	1746	16.5"Ø ECM	1 1/2	1 1/2	2	2	3	5*
	5500	18/18	1920	18.2"Ø ECM	1 1/2	2	2	3	3	5*
	6000	18/18	2095	18.2"Ø ECM	2	3	3	3	5	5*
	7000	18/18	2443	20.0"Ø ECM	3	3	3	5	5	7 1/2
	8000	18/18	2793	20.0"Ø ECM	3	5	5	5	5	7 1/2
	9000	18/18	3142	20.0"Ø ECM	5	5	5	7 1/2	7 1/2	10
	10000	18/18	3491	20.0"Ø ECM	5	7 1/2	7 1/2	7 1/2	7 1/2	10
	IDF 120	7000	20/20	1598	20.0"Ø ECM	1 1/2	2	3	3	5
8000		20/20	1826	20.0"Ø ECM	3	3	3	5	5	7 1/2
9000		20/20	2055	22.2"Ø ECM	3	3	3	5	5	10*
10000		20/20	2283	22.2"Ø ECM	3	5	5	5	7 1/2	10
11000		20/20	2511	22.2"Ø ECM	5	5	5	7 1/2	7 1/2	10
12000		20/20	2740	24.5"Ø ECM	5	7 1/2	7 1/2	7 1/2	7 1/2	10
13000		20/20	2969	24.5"Ø ECM	7 1/2	7 1/2	7 1/2	10	10	15
IDF 122	14000	20/20	3197	24.5"Ø ECM	7 1/2	10	10	10	10	15
	10000	22/22	1961	24.5"Ø ECM	5	5	5	5	7 1/2	10*
	11000	22/22	2157	24.5"Ø ECM	5	5	7 1/2	7 1/2	7 1/2	10*
	12000	22/22	2353	24.5"Ø ECM	5	5	7 1/2	7 1/2	10	10
	13000	22/22	2549	24.5"Ø ECM	7 1/2	7 1/2	10	10	10	15
	14000	22/22	2745	27.0"Ø ECM	7 1/2	7 1/2	10	10	10	15
	15000	22/22	2941	27.0"Ø ECM	10	10	10	15	15	15
	16000	22/22	3137	27.0"Ø ECM	10	10	10	15	15	15
IDF 125	17000	22/22	3333	27.0"Ø ECM	15	15	15	15	15	20
	14000	25/25	2028	27.0"Ø ECM	5	5	7 1/2	7 1/2	7 1/2	15*
	15000	25/25	2173	27.0"Ø ECM	5	5	7 1/2	7 1/2	10	15*
	16000	25/25	2318	27.0"Ø ECM	7 1/2	7 1/2	7 1/2	7 1/2	10	15*
	17000	25/25	2463	27.0" Ø ECM	7 1/2	7 1/2	10	10	10	15
	18000	25/25	2608	30.0" Ø ODP	7 1/2	7 1/2	10	10	15	15
	19000	25/25	2753	30.0" Ø ODP	7 1/2	7 1/2	10	10	15	15
	20000	25/25	2898	30.0" Ø ODP	10	10	15	15	15	20
22000	25/25	3187	30.0" Ø ODP	15	15	15	15	15	20	

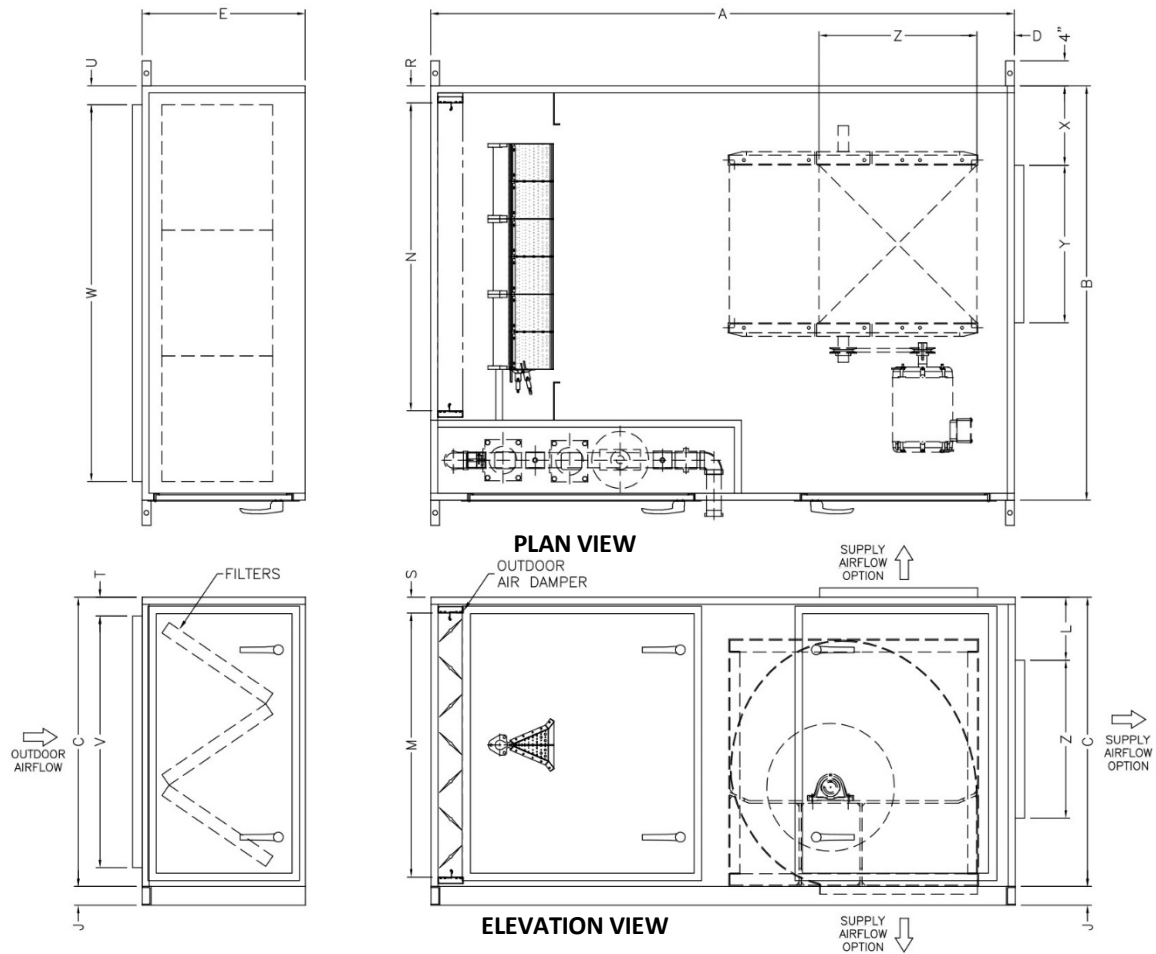
Input Capacity (MBH) vs Temp Rise (F)								
70	80	90	100	110	120	130	135	
82	94	106	118	130	142	154	158	
99	113	127	141	155	169	183	190	
115	131	148	164	181	197	214	222	
131	150	169	188	207	226	245	254	
148	169	190	211	232	253	274	285	
164	188	211	235	258	282	305	317	
181	207	232	258	284	310	336	349	
197	225	254	282	310	338	366	380	
214	244	275	305	335	366	396	412	
164	188	211	235	258	282	305	317	
205	235	264	293	323	352	381	396	
247	282	317	352	387	422	457	475	
288	329	370	411	452	493	534	555	
329	376	423	470	517	564	611	634	
247	282	317	352	387	422	457	475	
288	329	370	411	452	493	534	555	
329	376	423	470	517	564	611	634	
370	423	475	528	581	634	687	713	
411	470	528	581	634	687	713	792	
452	517	581	646	710	775	839	872	
493	563	634	704	775	845	916	951	
534	610	687	763	840	916	993	1030	
411	470	528	587	646	704	763	792	
452	517	581	646	710	775	839	872	
493	563	634	704	775	845	916	951	
575	657	740	822	904	986	1068	1109	
657	751	845	935	1025	1115	1205	1268	
740	845	951	1056	1162	1267	1373	1426	
822	939	1056	1173	1290	1407	1524	1585	
575	657	740	822	905	987	1070	1109	
657	751	845	939	1033	1127	1221	1268	
740	845	951	1056	1162	1267	1373	1426	
822	939	1057	1174	1292	1409	1527	1585	
904	1033	1162	1291	1420	1549	1678	1743	
986	1127	1268	1409	1550	1691	1832	1902	
1068	1221	1373	1526	1678	1831	1983	2060	
1150	1315	1479	1644	1808	1973	2137	2219	
822	939	1057	1174	1292	1409	1527	1585	
904	1033	1162	1291	1420	1549	1678	1743	
986	1127	1268	1409	1550	1691	1832	1902	
1068	1221	1373	1526	1678	1831	1983	2060	
1150	1315	1479	1644	1808	1973	2137	2219	
1233	1409	1573	1744	1914	2084	2254	2337	
1315	1503	1682	1861	2040	2219	2398	2487	
1397	1597	1796	1996	2195	2395	2594	2694	
1150	1315	1479	1644	1808	1973	2137	2219	
1233	1409	1585	1761	1937	2113	2289	2377	
1315	1503	1690	1878	2065	2253	2440	2536	
1397	1597	1796	1996	2195	2395	2594	2694	
1479	1690	1902	2113	2325	2536	2747	2853	
1561	1754	2007	2230	2453	2677	2900	3011	
1643	1878	2113	2348	2583	2818	3053	3170	
1808	2066	2321	2582	2840	3098	3356	3487	

IDF Industrial Direct-Fired Heater

IDF Specifications, IDF130 – IDF160#

MODEL	SCFM	BLOWER c/w BELT	OUTLET VELOCITY FPM	PLENUM FAN c/w DIRECT	Fan HP @ ESP in w.c						Input Capacity (MBH) vs Temp Rise (F)							
					0.25	0.5	0.75	1	1.5	2	70	80	90	100	110	120	130	135
IDF 130	20000	30/30	2132	33.0" Ø ODP	8	8	10	10	15	15	1643	1878	2113	2348	2583	2818	3053	3170
	22000	30/30	2346	33.0" Ø ODP	10	10	10	15	15	20	1808	2066	2324	2582	2840	3098	3356	3487
	24000	30/30	2559	33.0" Ø ODP	10	10	15	15	20	20	1972	2254	2536	2818	3100	3382	3664	3803
	26000	30/30	2772	36.5" Ø ODP	15	15	15	15	20	20	2137	2442	2747	3052	3357	3662	3967	4120
	28000	30/30	2985	36.5" Ø ODP	15	15	20	20	20	25	2301	2630	2958	3287	3615	3944	4272	4437
	30000	30/30	3199	36.5" Ø ODP	15	20	20	20	20	25	2465	2817	3170	3522	3875	4227	4580	4754
	32000	30/30	3412	36.5" Ø ODP	15	20	20	20	25	30	2630	3005	3381	3756	4132	4508	4883	5071
IDF 133	26000	33/33	2040	40.2" Ø ODP	10	15	15	15	15	20	2137	2442	2747	3052	3357	3662	3967	4120
	28000	33/33	2362	40.2" Ø ODP	15	15	15	15	20	25	2301	2630	2958	3287	3615	3944	4272	4437
	30000	33/33	2531	40.2" Ø ODP	15	15	15	20	20	25	2465	2817	3170	3522	3875	427	4580	4754
	32000	33/33	2700	40.2" Ø ODP	15	15	20	20	20	25	2630	3005	3381	3756	4132	4508	4883	5071
	34000	33/33	2868	40.2" Ø ODP	20	20	20	20	20	30	2794	3193	3592	3991	4390	4789	5188	5388
	36000	33/33	3037	40.2" Ø ODP	20	20	25	25	30	30	2958	3381	3803	4226	4648	5071	5493	5705
	38000	33/33	3206	40.2" Ø ODP	20	25	25	30	30	40	3123	3569	4015	4461	4907	5353	5799	6022
IDF 136	30000	36/36	2183	44.5" Ø ODP	15	15	15	15	20	25	2465	2817	3170	3522	3875	4227	4580	4754
	32500	36/36	2365	44.5" Ø ODP	15	15	20	20	25	25	2671	3052	3434	3815	4197	4578	4960	5151
	35000	36/36	2547	44.5" Ø ODP	20	20	20	20	25	30	2876	3287	3698	4109	4520	4931	5342	5753
	37500	36/36	2730	44.5" Ø ODP	20	20	25	25	30	30	3082	3522	3962	4402	4842	5282	5722	5943
	40000	36/36	2911	44.5" Ø ODP	25	25	25	30	30	40	3287	3757	4226	4696	5165	5635	6104	6339
	42500	36/36	3093	44.5" Ø ODP	25	30	30	30	35	40	3492	3991	4490	4989	5489	5989	6489	6735
	45000	36/36	3275	44.5" Ø ODP	30	30	40	40	40	40	3698	4226	4754	5282	5810	6338	6866	7131
IDF 138	37500	38 BI	2711	44.5" Ø ODP	20	25	25	25	30	30	3082	3522	3962	4402	4842	5282	5722	5943
	40000	38 BI	2892	44.5" Ø ODP	25	25	30	30	30	40	3287	3757	4226	4696	5165	5635	6104	6339
	42500	38 BI	3073	49.0" Ø ODP	30	30	30	40	40	40	3492	3991	4490	4989	5489	5989	6489	6735
	45000	38 BI	3254	49.0" Ø ODP	30	40	40	40	40	50	3698	4226	4754	5282	5810	6338	6866	7131
	47500	38 BI	3435	49.0" Ø ODP	40	40	40	40	50	50	3903	4461	5018	5576	6133	6691	7249	7528
	50000	38 BI	3615	49.0" Ø ODP	40	50	50	50	50	60	4109	4696	5283	5870	6457	7044	7631	7924
IDF 140#	47500	40 BI	2749	49.0" Ø ODP	30	30	30	40	40	40	3903	4461	5018	5576	6133	6691	7249	7528
	50000	40 BI	2894	49.0" Ø ODP	30	40	40	40	40	50	4109	4696	5283	5870	6457	7044	7631	7924
	52500	40 BI	3038	49.0" Ø ODP	40	40	40	40	50	50	4314	4930	5547	6163	6779	7396	8012	8320
	55000	40 BI	3183	49.0" Ø ODP	40	40	50	50	50	60	4520	5165	5811	6457	7102	7748	8393	8716
	57500	40 BI	3328	49.0" Ø ODP	50	50	50	50	60	60	4725	5400	6075	6750	7425	8100	8775	9113
	60000	40 BI	3472	49.0" Ø ODP	50	50	50	60	60	60	4930	5635	6339	7043	7748	8452	9157	9509
IDF 145#	57500	45 BI	2806	49.0" Ø ODP	30	30	40	40	40	50	4725	5400	6075	6750	7425	8100	8775	9113
	60000	45 BI	2928	49.0" Ø ODP	40	40	40	40	50	50	4930	5635	6339	7043	7748	8452	9157	9509
	62500	45 BI	3050	54.2" Ø ODP	40	40	40	50	50	50	5136	5870	6603	7337	8071	8804	9538	9905
	65000	45 BI	3172	54.2" Ø ODP	40	40	50	50	50	60	5341	6104	6867	7630	8393	9156	9919	10301
	67500	45 BI	3294	54.2" Ø ODP	50	50	50	50	60	60	5547	6339	7132	7924	8716	9509	10301	10697
	70000	45 BI	3416	54.2" Ø ODP	50	50	50	60	60	75	5752	6574	7396	8218	9040	9862	10684	11093
IDF 148#	60000	48 BI	2141	54.2" Ø ODP	25	30	30	40	40	50	4930	5635	6339	7043	7748	8452	9157	9509
	65000	48 BI	2616	54.2" Ø ODP	30	40	40	40	50	50	5341	6104	6867	7630	8393	9156	9919	10301
	70000	48 BI	2817	54.2" Ø ODP	40	40	50	50	50	50	5752	6574	7396	8218	9040	9862	10684	11093
	75000	48 BI	3018	60.0" Ø ODP	50	50	50	50	60	75	6163	7043	7924	8804	9685	10565	11446	11886
	80000	48 BI	3219	60.0" Ø ODP	50	50	60	60	75	75	6574	7513	8452	9391	10330	11270	12209	12678
		85000	48 BI	3416	60.0" Ø ODP	50	50	60	60	75	6985	7983	8980	9978	10976	11974	12972	13471
IDF 154#	65000	54 BI	2134	60.0" Ø ODP	30	30	30	40	40	50	5341	6104	6867	7630	8393	9156	9919	10301
	70000	54 BI	2298	60.0" Ø ODP	40	40	40	40	50	50	5752	6574	7396	8218	9040	9862	10684	11093
	75000	54 BI	2462	60.0" Ø ODP	40	40	40	40	50	60	6163	7043	7924	8804	9685	10565	11446	11886
	85000	54 BI	2791	66.0" Ø ODP	50	50	50	50	60	75	6985	7983	8980	9978	10976	11974	12972	13471
	90000	54 BI	2955	66.0" Ø ODP	60	60	60	60	75	75	7396	8452	9509	10565	11622	12678	13735	14263
		95000	60 BI	2281	66.0" Ø ODP	n/a	n/a	40	50	50	60	6985	7983	8980	9978	10976	11974	12972
IDF 160#	95000	60 BI	2550	66.0" Ø ODP	40	40	50	60	60	75	7807	8922	10037	11152	12267	13382	14498	15055
	105000	60 BI	2818	73.0" Ø ODP	40	50	60	75	75	100	8628	9861	11093	12326	13559	14791	16024	16640
	115000	60 BI	3086	73.0" Ø ODP	75	75	75	100	100	100	9450	10800	12150	13500	14850	16200	17550	18225
	125000	60 BI	3355	73.0" Ø ODP	100	100	100	100	100	125	10272	11739	13207	14674	16141	17609	19076	19810

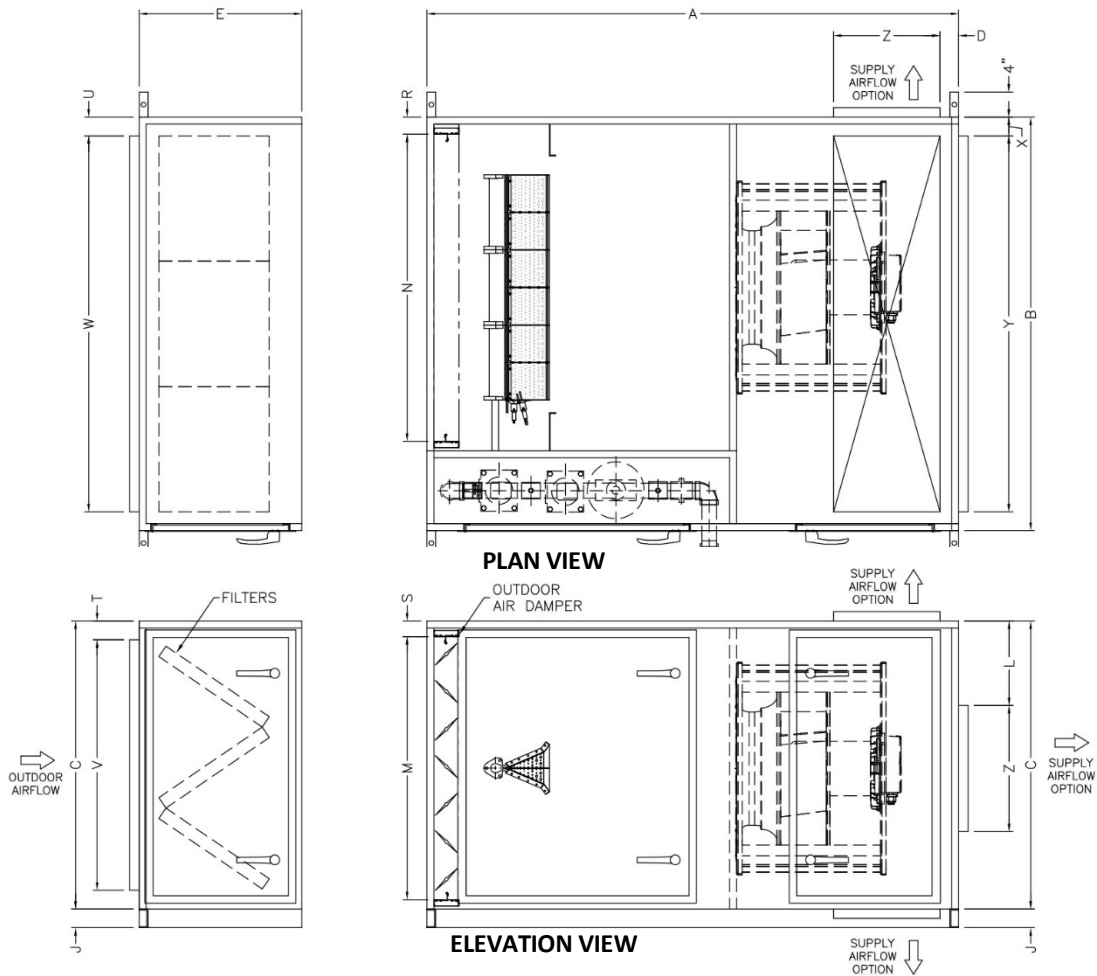
Direct-Fired Makeup Air Units, Indoor, Single Plenum Fan



MODEL	A	B	C	D	E	J	M	N	R	S	V	W	X	Y	Z
IDF-109	70	30	28	5	22	2	24	16 1/2	2 3/4	2 1/2	22	24	7 5/8	11 3/4	10 5/16
IDF-112	78	38	28	6	27	2	24	24 1/2	2 3/4	2 1/2	22	32	7 1/8	15 9/16	13 7/16
IDF-115	78	38	38	6	31	2	34	24 1/2	2 3/4	2 1/2	32	32	8 5/8	18 9/16	15 7/8
IDF-118	85	53	46	6	26	3	42	38	2 3/4	2 1/2	40	47	10 1/8	21 15/16	18 3/4
IDF-120	93	66	46	6	26	3	42	49	2 3/4	2 1/2	40	60	12 5/8	25 1/8	25 1/8
IDF-122	101	72	46	6	31	3	42	55	2 3/4	2 1/2	40	66	13	26 5/8	28 1/8
IDF-125	108	80	54	6	32	4	50	63	2 3/4	2 1/2	48	74	16	31 9/16	31 9/16
IDF-128	116	86	60	6 1/2	34	4	56	65	2 3/4	2 1/2	54	80	19	35 3/8	35 3/8
IDF-130	120	86	60	8 1/2	34	4	56	65	2 3/4	2 1/2	54	80	16 1/8	36 3/4	36 3/4
IDF-133	120	100	68	6 1/2	30	4	64	75	2 3/4	2 1/2	62	94	20 1/2	39 5/8	39 5/8
IDF-136	120	100	68	5	33	4	64	75	2 3/4	2 1/2	62	94	19	44 1/2	44 3/8
IDF-138	132	110	85	-	33	4	81	85	2 3/4	2 1/2	79	104	19 3/8	51 13/16	38 11/16
IDF-140	132	120	90	-	33	4	86	95	2 3/4	2 1/2	84	114	21 1/4	57 3/16	42 11/16
IDF-145	148	129	96	-	33	6	92	104	2 3/4	2 1/2	90	123	23 3/8	63 1/8	47 1/8
IDF-148	148	140	106	-	33	6	102	115	2 3/4	2 1/2	100	134	26 5/8	69 7/16	51 15/16
IDF-154	167	152	116	12	31	6	112	127	2 3/4	2 1/2	110	146	31 1/2	76 1/4	57 3/8
IDF-160	188	166	122	12	33	6	115	141	2 3/4	2 1/2	116	160	32 1/8	85	63 7/16

1. Dimensions are listed in inches and are subject to manufacturing tolerances.
2. 1-1/2" inlet and discharge flanges.
3. Right hand unit shown, left hand unit available.
4. Service access panels must not be obstructed. The recommended clearance shall be 24 inches.
5. Outdoor units are complete with a sloped roof, slopes away from access door side.
6. All dimensions are in inches.

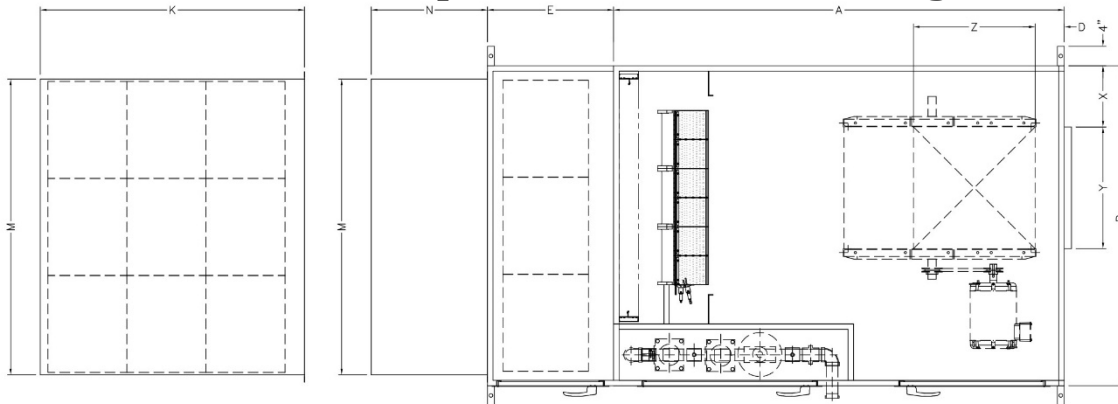
Direct-Fired Makeup Air Units, Indoor, Single Plenum Fan



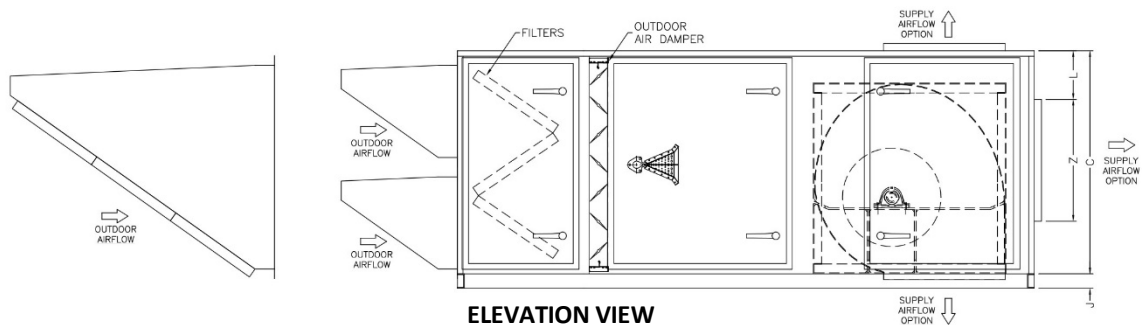
MODEL	A	B	C	D	E	J	M	N	R	S	T	U	V	W	X	Y	Z
IDF-109	70	30	28	3	22	2	24	16 1/2	2 3/4	2 1/2	3	3	22	24	3	24	9
IDF-112	70	38	28	3	27	2	24	24 1/2	2 3/4	2 1/2	3	3	22	32	3	32	9
IDF-115	78	38	38	3	31	2	34	24 1/2	2 3/4	2 1/2	3	3	32	32	3	32	13
IDF-118	78	53	46	3	26	3	42	38	2 3/4	2 1/2	3	3	40	47	3	47	15
IDF-120	85	66	46	3	26	3	42	49	2 3/4	2 1/2	3	3	40	60	3	60	17
IDF-122	101	72	46	3	31	3	42	55	2 3/4	2 1/2	3	3	40	66	3	66	19
IDF-125	108	80	54	3	32	4	50	63	2 3/4	2 1/2	3	3	48	74	3	74	22
IDF-128	116	86	60	4	34	4	56	65	2 3/4	2 1/2	3	3	54	80	4	80	26
IDF-130	120	86	60	4	34	4	56	65	2 3/4	2 1/2	3	3	54	80	4	80	29
IDF-133	120	100	68	4	30	4	64	75	2 3/4	2 1/2	3	3	62	94	4	94	28
IDF-136	120	100	68	4	33	4	64	75	2 3/4	2 1/2	3	3	62	94	4	94	34
IDF-138	132	110	85	4	33	4	81	85	2 3/4	2 1/2	3	3	79	104	4	104	30
IDF-140	132	120	90	4	33	4	86	95	2 3/4	2 1/2	3	3	84	114	4	114	30
IDF-145	148	129	96	4	33	6	92	104	2 3/4	2 1/2	3	3	90	123	4	123	42
IDF-148	148	140	106	4	33	6	102	115	2 3/4	2 1/2	3	3	100	134	4	134	36
IDF-154	160	152	116	4	31	6	112	127	2 3/4	2 1/2	3	3	110	146	4	146	42
IDF-160	188	166	122	4	33	6	115	141	2 3/4	2 1/2	3	3	116	160	4	160	54

1. Dimensions are subject to manufacturing tolerances.
2. 1-1/2" inlet and discharge flanges.
3. Right hand unit shown, left hand unit available.
4. Service access panels must not be obstructed. The recommended clearance shall be 24 inches.
5. Outdoor units are complete with a sloped roof, slopes away from access door side.
6. All dimensions are in inches.

Direct-Fired Makeup Air Units, Outdoor, Single Blower



PLAN VIEW

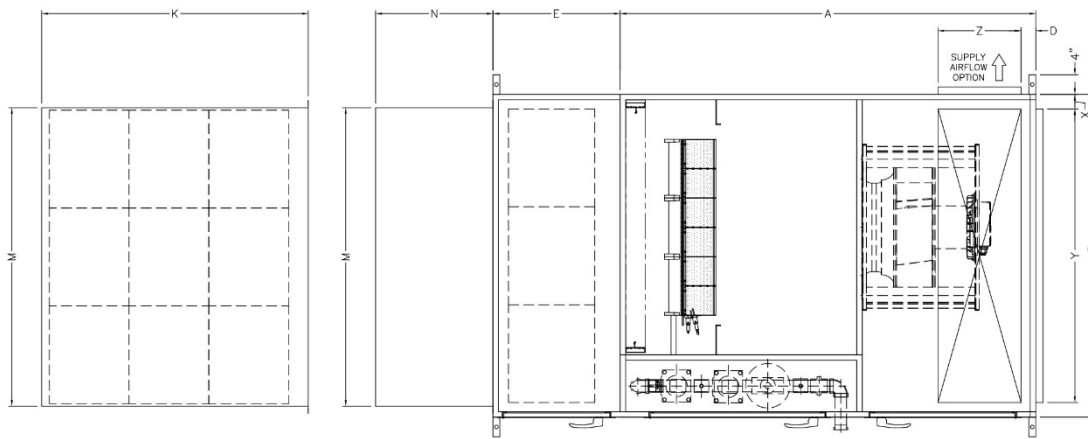


ELEVATION VIEW

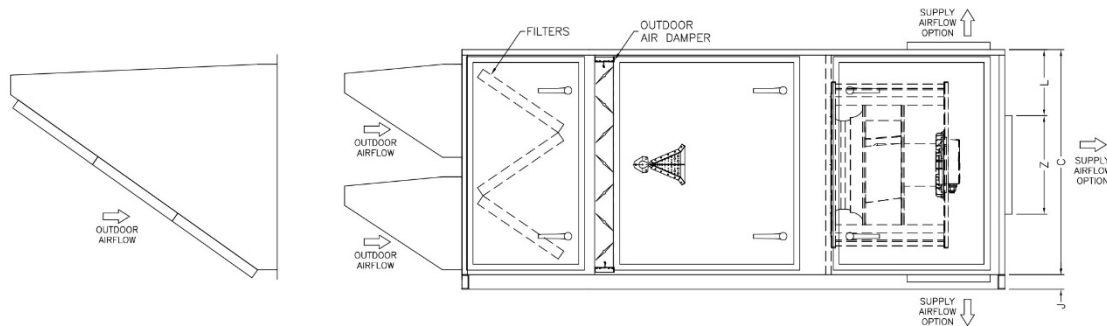
MODEL	A	B	C	D	E	J	K	M	N	X	Y	Z
IDF-109	70	30	28	5	22	2	30	25	-	7 5/8	24	10 5/16
IDF-112	78	38	28	6	27	2	40	33	-	7 1/8	32	13 7/16
IDF-115	78	38	38	6	31	2	46	37	-	8 5/8	36	15 7/8
IDF-118	85	53	46	6	26	3	54 1/2	48	-	10 1/8	47	18 3/4
IDF-120	93	66	46	6	26	3	54 1/2	61	-	12 5/8	60	25 1/8
IDF-122	101	72	46	6	31	3	72	67	-	13	66	28 1/8
IDF-125	108	80	54	6	32	4	68	77	-	16	74	31 9/16
IDF-128	116	86	60	6 1/2	34	4	50	83	50	19	78	35 3/8
IDF-130	120	86	60	8 1/2	34	4	52	83	52	16 1/8	78	36 3/4
IDF-133	120	100	68	6 1/2	30	4	60	97	60	20 1/2	92	39 5/8
IDF-136	120	100	68	-	33	4	-	97	60	19	92	44 3/8
IDF-138	132	110	85	-	33	4	-	107	56	19 3/8	102	38 11/16
IDF-140	132	120	90	-	33	4	-	117	64	21 1/4	112	42 11/16
IDF-145	148	129	96	-	33	6	-	126	70	23 3/8	121	47 1/8
IDF-148	148	140	106	-	33	6	-	137	70	26 5/8	132	51 15/16
IDF-154	167	152	116	12	31	6	-	149	70	31 1/2	144	57 3/8
IDF-160	188	166	122	12	33	6	-	163	90	32 1/8	158	63 7/16

1. Dimensions are subject to manufacturing tolerances.
2. 1-1/2" inlet and discharge flanges.
3. Right hand unit shown, left hand unit available.
4. Service access panels must not be obstructed. The recommended clearance shall be 24 inches.
5. Outdoor units are complete with a sloped roof, slopes away from access door side.
6. All dimensions are in inches.

Direct-Fired Makeup Air Units, Outdoor, Single Plenum Fan



PLAN VIEW



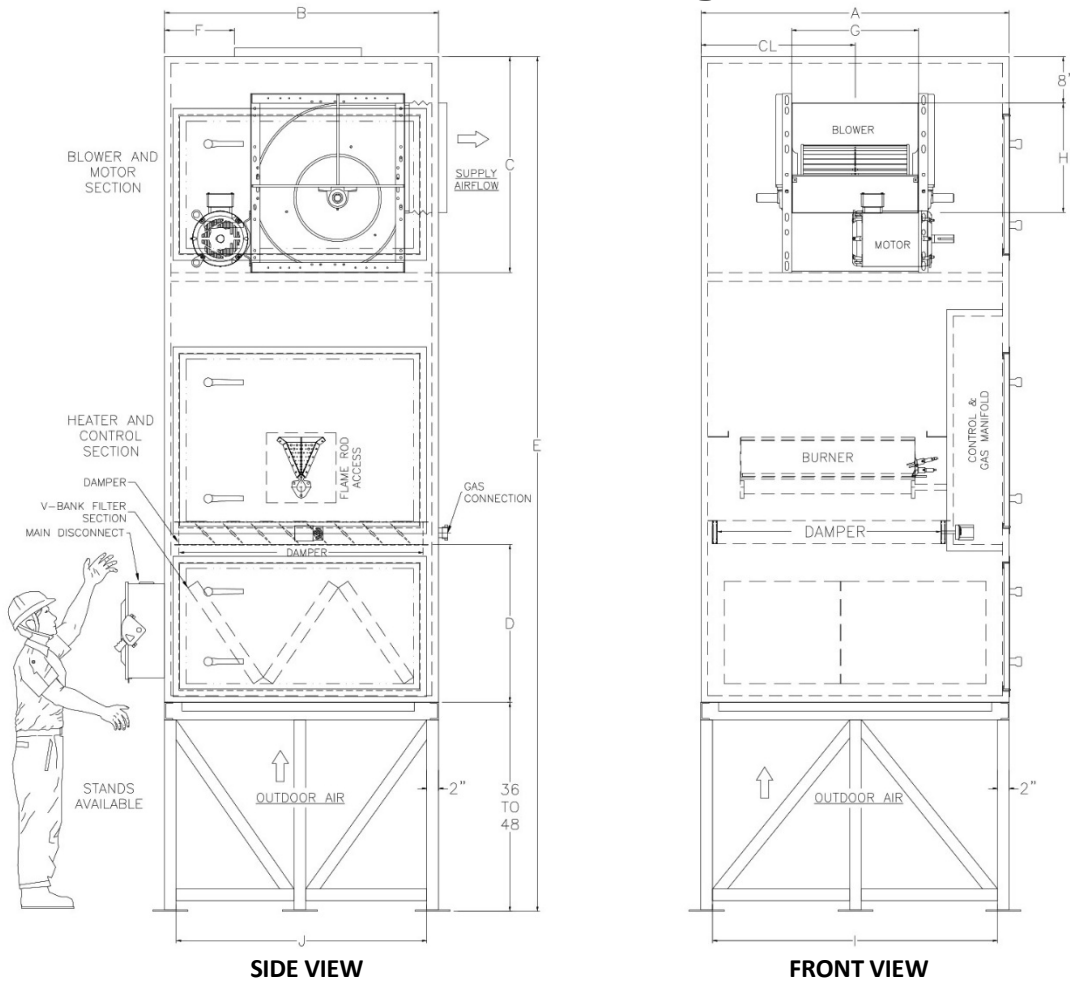
ELEVATION VIEW

MODEL	A	B	C	D	E	J	K	M	N	X	Y	Z
IDF-109	70	30	28	5	22	2	30	25	-	3	24	9
IDF-112	78	38	28	6	27	2	40	33	-	3	32	9
IDF-115	78	38	38	6	31	2	46	37	-	3	36	13
IDF-118	85	53	46	6	26	3	54 1/2	48	-	3	47	15
IDF-120	93	66	46	6	26	3	54 1/2	61	-	3	60	17
IDF-122	101	72	46	6	31	3	72	67	-	3	66	19
IDF-125	108	80	54	6	32	4	68	77	-	3	74	22
IDF-128	116	86	60	6 1/2	34	4	50	83	50	4	78	26
IDF-130	120	86	60	8 1/2	34	4	52	83	52	4	78	29
IDF-133	120	100	68	6 1/2	30	4	60	97	60	4	92	28
IDF-136	120	100	68	5	33	4	-	97	60	4	92	34
IDF-138	132	110	85	-	33	4	-	107	56	4	102	30
IDF-140	132	120	90	-	33	4	-	117	64	4	112	30
IDF-145	148	129	96	-	33	6	-	126	70	4	121	42
IDF-148	148	140	106	-	33	6	-	137	70	4	132	36
IDF-154	167	152	116	12	31	6	-	149	70	4	144	42
IDF-160	188	166	122	12	33	6	-	163	90	4	158	54

1. Dimensions are subject to manufacturing tolerances.
2. 1-1/2" inlet and discharge flanges.
3. Right hand unit shown, left hand unit available.
4. Service access panels must not be obstructed. The recommended clearance shall be 24 inches.
5. Outdoor units are complete with a sloped roof, slopes away from access door side.
6. All dimensions are in inches.

IDF Industrial Direct-Fired Heater

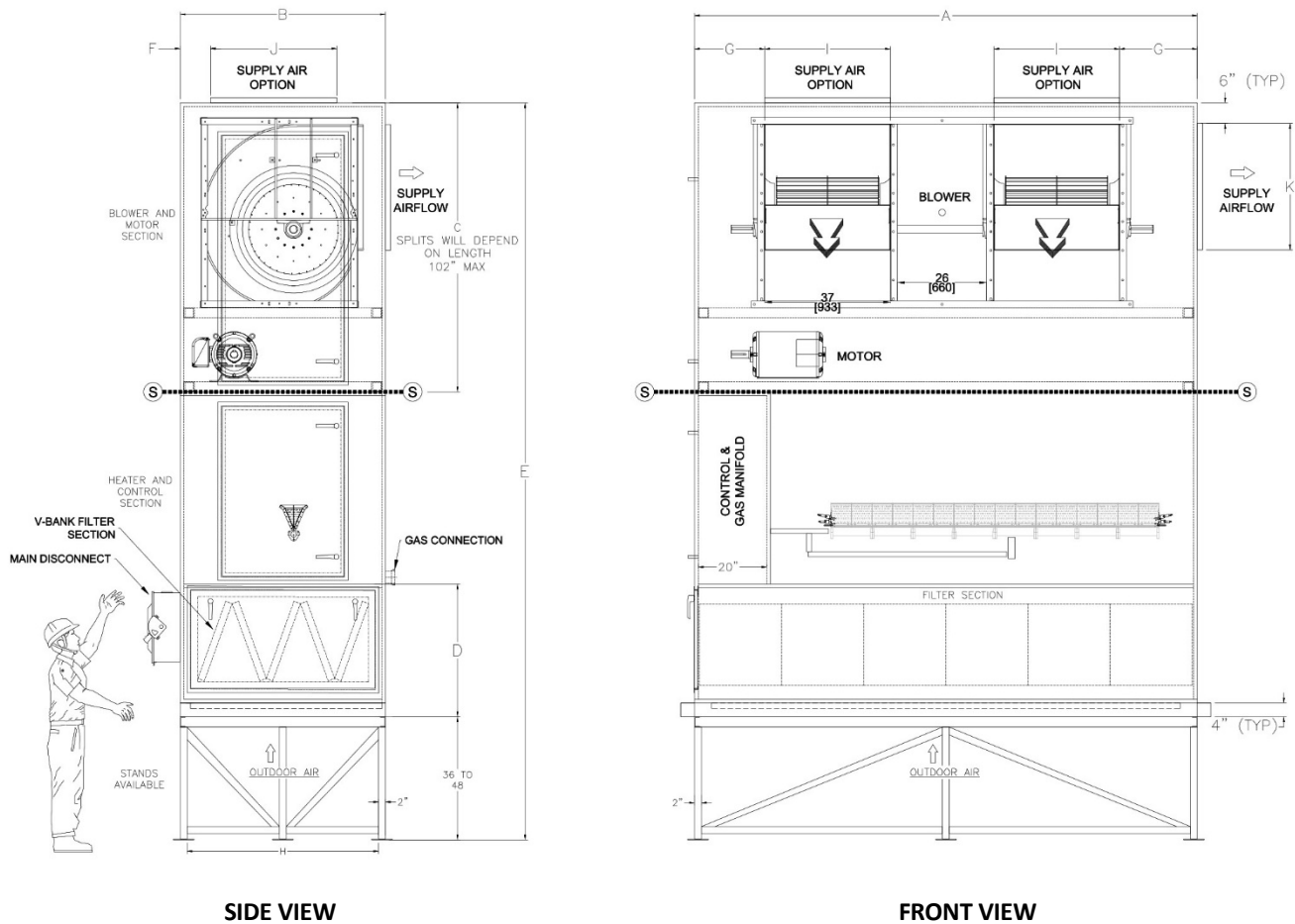
Direct-Fired, Vertical, Single Blower



MODEL	CFM RATING	A	B	C	D	E	F	G	H	I	J
IDF 112	2000-4000	38	29 1/8	24 3/4	26 1/16	141	5	13 7/16	13 7/16	35 3/4	26 7/8
IDF 115	3000-6500	42	39 1/8	27 3/4	29 3/4	146	10	15 7/8	15 7/8	39 3/4	36 7/8
IDF 118	5000-10000	47 1/8	44 7/8	37 1/2	24 1/8	147	12	18 1/8	18 1/8	50 3/4	47 1/8
IDF 120	7000-14000	66	47 1/8	41 15/16	24 1/8	155	12 5/8	24 3/4	24 3/4	63 3/4	44 7/8
IDF 122	10000-17000	72	47 1/8	44 1/2	29 11/16	168	13	27 1/4	27 1/4	39 3/4	44 7/8
IDF 125	14000-22000	80	55 1/8	44 13/16	29 7/8	176	16	31 1/4	31 1/4	77 3/4	52 7/8
IDF 128	17000-26000	86	61 1/8	54 5/16	32 1/8	186	20 7/16	35 3/8	35 3/8	83 3/4	58 7/8
IDF 130	20000-32000	86	61 1/8	63 3/4	32 7/8	190	15	36 3/4	36 3/4	83 3/4	58 7/8
IDF 133	26000-38000	100	69 1/8	62 3/4	28 7/8	186	20	39 3/4	39 3/4	97 3/4	66 7/8
IDF 136	30000-45000	100	68	60 7/16	31 7/8	189	22 1/4	44 1/2	44 1/2	97 3/4	66 7/8
IDF 138	37500-50000	110	72 1/8	67 3/4	34 7/8	191	24	48 3/4	48 3/4	101 3/4	71 7/8
IDF 140	47500-60000	117	74	71 1/2	38 3/4	196	26	50 3/4	50 3/4	112 3/4	101 7/8
IDF 145	57500-70000	122	78 1/8	76 1/2	42 1/8	101	30 3/4	53 3/4	53 3/4	114 3/4	105 7/8
IDF 148	60000-80000	126	82 1/8	80 1/2	45 1/8	110	34 3/4	57 3/4	57 3/4	120 3/4	115 7/8
IDF 154	65000-90000	130	86 1/8	85 1/2	50 1/8	120	37 3/4	63 3/4	63 3/4	120 3/4	115 7/8
IDF 160	Over 85000	140	90	90 1/2	57 1/8	180	40 3/4	65 3/4	65 3/4	127 3/4	120 7/8

1. Some dimensions and layout are subject to change due to CFM requirements.
2. Dimensions are subject to manufacturing tolerances
3. 1-1/2" inlet and discharge flanges.
4. Split units will occur at the max length of 102 in.
5. All dimensions are in inches.
6. All dimensions are subject to design/production change without notice.

Direct Fired, Vertical, Dual Blowers



MODEL	CFM RATING	FAN SIZE	A	B	C	D	E	F	G	H	I	J
IDF-118	5000-10000	2-15-15	107	40	39 3/8	34	147	12	11	44 7/8	21 7/8	18 7/8
IDF-120	7000-14000	2-18-18	124	48	45 1/8	34	155	13	12	44 1/8	24 3/4	24 3/4
IDF-122	10000-17000	2-18-18	124	54	49 1/16	34	168	13	13	44 1/8	27 3/4	27 3/4
IDF-125	14000-22000	2-22-22	132	54	54 1/16	34	176	16	14 1/2	52 7/8	31 3/4	31 3/4
IDF-128	17000-26000	2-22-22	154	60	57 9/16	34	186	15	16	58 7/8	35 3/8	35 3/8
IDF-130	20000-32000	2-27-27	154	60	61 1/8	50	190	15	17	58 7/8	36 3/4	36 3/4
IDF-133	26000-38000	2-27-27	176	66	64 5/16	50	189	20	18 1/2	66 7/8	39 5/8	39 3/4
IDF-136	30000-45000	2-30-30	176	66	73 1/8	50	189	20	20	66 7/8	44 1/2	44 1/2

1. Some dimensions and layout are subject to change due to CFM requirements.
2. Dimensions are subject to manufacturing tolerances.
3. 1-1/2" inlet and discharge flanges.
4. Split units will occur at the max length of 102 in.
5. All dimensions are in inches.
6. All dimensions are subject to design/production change without notice

IDF Industrial Direct-Fired Heater Typical Specifications

A Moffitt direct fired (make-up air unit) is designed for (indoor) (outdoor) installation. The capacity and configuration shall be as detailed on the drawings. The unit shall be ETL- C-ETL certified and listed to follow the current ANSI Z83.4 & CSA 3.7 standards. The line burner, gas train and controls are to be in accordance with (ANSI) (FM) (IRI) (FM and IRI) requirements.

The unit is to be completely factory test fired to verify proper operation. The unit capacity is to be validated with an instantaneous flow meter. A complete electrical circuit analysis is to be conducted and all systems operated and measured. A combustion analyzer is to be employed while the unit is operating at full capacity to verify combustion emissions. Burner combustion must be clean and odorless, and no aliphatic aldehydes are to be detectable. Combustion efficiency must limit the products of combustion to a maximum of 5 ppm carbon monoxide and 0.5 ppm nitrogen dioxide.

UNIT CASING

Unit construction is to be of industrial quality heavy gauge galvanized steel. The unit design shall incorporate a full base pan supported by an integral welded structural steel channel base frame. Base frames are to be of industrial welded structural steel integrity, formed sheet metal bases are unacceptable. All structural steel base frames are to be treated with an industrial epoxy primer enriched with a rust inhibitor.

To ensure the casings are airtight and weatherproof, all panels are to be caulked during assembly. All casings are to be hand fitted and secured with gasketed self-tapping Tek screws. Roof casing features a three- break standing seam panel design. Roof casings are to be sloped on outdoor units to prevent standing water. Sloped roofs are to be ¼ in. per foot and feature full drain troughs.

Entire unit casing and accessories are to be insulated with mineral wool insulation with hard neoprene facing. (1 or 2 in. thick 1-1/2# or 2# density) insulation is to be secured with industrial glue and welded pin spots. Insulation is to be certified to fire and flame spread ratings as outlined by the ANSI code. Unit shall be complete with optional 22-gauge internal liner throughout the unit. The entire floor of the unit features an industrial quality heavy gauge steel liner sandwiching the insulation.

Units are to be equipped with double walled access doors for all serviceable components. Access doors are to have full-length stainless steel piano hinges. High performance double wall access doors for HVAC air handling units. Pre-hung, insulated, door leaf with aluminum frame. Pressure injected with minimum 2.2 pounds per cubic foot of polyurethane foam. Polyurethane foam bonds with sheets to make a seamless, rigid panel with minimum insulating value of R6.5 per inch. Thermal door uses a high- density polyurethane thermal break. All outdoor unit access doors are to be equipped with stainless steel drain troughs, Austin Romtech handles and trim seal gaskets. Units are to be finished with an industrial grade chain stop alkyd enamel paint. The medium grey finish coat is to be a minimum of 3 mm thick and provide 100% coverage.

BLOWER / MOTOR SECTION

Unit(s) shall be supplied with AMCA rated centrifugal forward curve DWDI statically and dynamically balanced blower. The fan shall be mounted on a heavy-duty machine and polished shaft. The shaft's maximum operating speed is not to exceed 75% of its first critical speed. The bearings and motor shall be mounted in the airstream. The T-frame motor shall be mounted on a fully adjustable base. The bearings are to be industrial pillow block type supplied with extended grease lines. The blower is to be driven with an (adjustable) (fixed) 1.25 ft² V-belt drive package concealed in a belt guard. Outdoor units shall have hinged door(s) to provide easy access to maintain and inspect motor, belts & bearings. Unit shall be complete with internal spring vibration isolation.

BURNER SECTION

Each unit shall be equipped with a wide range fully modulating, two stage combustion, direct gas-fired burner capable of 30:1 turndown. The burner shall have stainless steel combustion baffles, cast aluminum burner manifold, non-clogging gas ports, spark-ignited intermittent pilot, and flame safeguard system. Burner combustion must be clean and odorless. Combustion efficiency must limit the products of combustion to a maximum of 5 ppm carbon monoxide and 0.5 ppm nitrogen dioxide. The burner profile is to be equipped with adjustable profile plates (and modulating profile plate bypass dampers). (The bypass dampers shall be elevated temperature aluminum construction c/w air-foil type blades). A heat-treated glass observation port shall provide a full view of flames. Access door(s) are to be provided to allow easy maintenance and inspection for burner, ignitor, and flame rod.

DAMPERS & FILTER SECTION

The intake dampers are galvanized steel (aluminum airfoil low leak) type (with seals). The intake dampers shall be equipped with 2-position (modulating) actuators. The bypass dampers shall be elevated temperature aluminum construction c/w air-foil low leak type blades. Outdoor units are equipped with a weather hood with metal filter racks, filters shall be 2" pleated throwaway type with minimum of 85% arrestance and 30% efficiency. Indoor units shall be equipped with a filter section, filter access shall be through a latched and gasketed access door. (Final filters shall be 4- or 12-inch-high efficiency cartridge filters.)

IDF Industrial Direct-Fired Heater

CONTROL/MANIFOLD COMPARTMENT

Unit control enclosure to have hinged access. Terminal strip and all wiring shall be numbered. The controls shall include:

- Blower motor starter w/ambient compensated for overloads and auxiliary contact(s). Primary to 120v control transformer
- BACNET DDC controller, smart space sensor
- Exhaust fan interlock terminals, reverse exhaust interlock 6,000-volt ignition transformer
- Control circuit breaker and service switch Manual reset temperature high limit.
- Flame safeguard relay w/ LED status and flame rod Discharge temperature control sensor
- Differential air proving safety switch Automatic low temperature limit (optional)

All wiring external to control enclosure shall be run in conduit. The gas manifold shall include:

- Main gas pressure regulator
- High gas pressure regulator (optional) Manual shutoff & test firing valve Main gas automatic shutoff valve
- Auxiliary main gas automatic shutoff valve Modulating control system.
- Pilot pressure regulator Pilot automatic shutoff valve Pilot manual shutoff valve Pilot needle valve
- Multiple test ports

Outdoor units shall have hinged doors to provide easy access to maintain and inspect valves and controls.

IDF Industrial Direct-Fired Heater

PHOTOS

